

REMARKS

Claims 1-15 are in the application as filed. Claim 1 has been amended again to further clarify the invention. Claims 2, 7 and 9 have been cancelled. Claims 16, 17 and 18 were added via a previously submitted amendment. Claim 19 has been added herein.

REJECTION UNDER 35 USC 112

The Claim rejections under 35 USC 112 have been withdrawn. Applicant thanks the Examiner for withdrawing this rejection.

REJECTION UNDER 35 USC 102 (b)

Claims 1-4-6., 8, 11-13, 15-18 were again rejected as obvious over Lent et al. (5,837,0420) in view of Hirasa (2003/0166742) in further view of Grant et al or alternatively Kodas et al.

As applicant has discussed in a prior response, Lent et al. ('420) claims an "jet ink composition suitable for providing a mark on white or light colored substrates, wherein said composition comprises a colorant and an ink carrier and has a viscosity of from about 1.8 centipoises (cps) to about 6 cps at 25.degree. C., an electrical resistivity of from about 20 ohm-cm to about 2,000 ohm-cm, and a sonic velocity of from about 1200 meters/second to about 1700 meters/second, wherein said mark is completely or substantially invisible to the unaided eye and is visible only when excited by ultraviolet light, and said colorant comprises a rare earth metal and a chelating ligand, absorbs at a wavelength of from about 275 nm to about 400 nm, and fluoresces at a wavelength of from about 575 nm to about 700 nm,rosium, or terbium, the chelating ligand is not dibenzoylmethane."

Hirasa discloses a recording liquid as described in a previous response. The composition in Hirasa does not contain all the materials in the instant case. The present invention relates to depositing an ink composition on a substrate by ink jet printing; wherein said composition comprises:

- (a) conductive functional material;
 - (b) organic polymer comprising polyvinylpyrrolidone; dispersed in
 - (c) dispersion vehicle selected from organic solvent, water, or mixtures thereof;
- and wherein the viscosity of said composition is between 5 mPa.s to 50 mPa.s at a temperature of 25 to 35°C wherein the conductive functional material has an average

particle size (D₅₀) of 0.1 to 1.2 microns, wherein the D₁₀₀ is not larger than 5 microns and also wherein said composition maintains stability for 24 hours.

These limitations are not all found in Hirasa's invention. The present Claim 1 was previously amended to add "firing said ink jet printable composition and substrate wherein said composition further comprises a monomer, wherein said monomer is ultraviolet curable or thermally curable.

Each of the references cited lacks certain characteristics as applicant's claims are now limited (see present Claim 1) and also see new Claim 19.

The Examiner sees a difference between applicant's claims and the Lent et al. and Hirasa cases as the requirement for firing in the present application. However, EP 1223201 was cited by the Examiner as teaching a firing step. Present Claim 3, adds a surface tension enhancing treatment to the substrate but was also rejected over Grant et al. or alternatively Kodas et al. The Examiner argues that these references disclose methods of changing surface tension.

REJECTION UNDER 35 USC 103

Claims 1, 3-6 8, 11-13, 15, 17-18 were rejected as obvious in view of Sasaki et al., Hirasa et al, EP 1223201, and Grant et al or Kodas.

Claims 1, 3-6 and 8, 10-17 were rejected under 35 USC 103(a) as being unpatentable over De Voeght et al. in View of Hirasa et al., Shimura and Roth, EP 1223201, Grant or Kodas.

The previous Examiner had noted that the difference between De Voeght et al. and the presently claimed invention is the particle size limits of the present claims and its specific viscosity. However, he cited Hirasa as using particles of a maximum 5 micron size. Roth is cited as teaching curable ink jet ink with a viscosity measured at 25 degrees. By addition of the present firing step to Claim 1 these references are avoided. Applicant also added the limitations of Claim 9 to Claim 1, to further avoid these references.

Claim 3 was rejected as unpatentable over De Voegt et al, in view of the other references but also in view of Grant and Kodas as earlier applied to the issue of treatment applied to reducing surface tension. The Examiner asserted that it would be obvious to treat the substrate of De Voegt et al with the methods of Grant or Kodas to arrive at the current invention.

Shimura and Roth are cited as teaching curable ink jet ink with a viscosity measured at 25 degrees. The present invention that has a firing step in Claim 1 and voids Roth. Shimura

claims a “method for replenishing an ink sheet including a dielectric layer and a conductive ink layer formed on the dielectric layer wherein portions of the ink layer have been removed during transcription to create deleted portions in the ink layer, comprising:
supplying replacement conductive ink material to the ink sheet so that the conductive ink material contacts the depleted portions formed during transcription and contacts the surface of the non-transcribed portions of the ink layer, providing a base electrode on the opposite surface of the dielectric layer from the ink layer in at least the region of the depleted portions containing the replacement ink material, imparting an electric charge to the replacement conductive ink material in the depleted portions so that the conductive ink material is retained on the dielectric layer in the region of the depleted portions and the ink material is not attracted to the non-transcribed portions of the ink layer, and removing the non-attracted ink material.”

None of the references cited above specifically teach the conductive functional material with the present particle sizes and the other limitations nor do they teach the embodiment wherein there is an added monomer and the monomer is ultraviolet curable or thermally curable.

Applicant respectfully points out that it may be true that specific patents teach some aspects of the present invention and others teach other aspects. Chemistry is by its nature an unpredictable art and it cannot be assumed a priori that the various combinations of limitations that work in some applications will work in the present application.

In view of the amendments proposed herein and arguments advanced, allowance of Claims 1,3-6, 8, 10, 11, 13-19 is respectfully solicited.

If anything further is needed to advance the allowance of this application, the Examiner is urged to contact applicant's attorney at the telephone number below.

Respectfully submitted,

/BARBARA C. SIEGELL/

BARBARA C. SIEGELL
Attorney for Applicant
Registration No.: 30,684

Telephone: (302) 992-4931
Facsimile: (302) 992-537

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